dLAN®

500 duo+

devolo

The Network Innovation

devolo dLAN® 500 duo+

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1 Preface

1.1 Thank you!

The dLAN 500 duo+ allows you to set up your own home network with almost no effort. Because the clever dLAN technology transmits the data over the household electrical wiring, you do not have to lay any new cables.

With the dLAN 500 duo+, no power outlet in the room goes to waste-the adapter has an integrated power outlet. The integrated mains filter significantly improves data transmission in the home network. The two LAN ports allow for two devices to be connected directly. Especially practical for computers and network printers in the home office or Smart TV and a game console in the living room. The connection via household power lines with the dLAN 500 duo+ makes the Internet available in every room.

To protect your data, simply press a button on the dLAN 500 duo+ to activate the convenient and secure 128-bit AES (Advanced Encryption Standard) encryption. In addition, the patented power saving mode, which comes standard, automatically reduces the power consumption.

1.1.1 About this manual

After a brief introduction to "dLAN" and "Green IT" basics in **Chapter 2**, **Chapter 3** will cover successfully setting up your dLAN 500 duo+. **Chapter 4** explains how to configure your dLAN network. Tips for bandwidth optimization, information about product safety and environmental compatibility of the device and our warranty conditions can be found in **Chapter 5** and conclude the manual.

Description of the symbols

Here we briefly describe the meaning of the symbols used in this manual.

Very important note. Failure to observe this note may result in damage.

Important note that should be observed.

Additional information, background material and configuration tips for your device.

If you have any further ideas or suggestions related to our products, we would be delighted to hear from you at support@devolo.com!

devolo on the Internet

For detailed information on our products or "dLAN", visit www.devolo.com. The **Service Centre** area contains downloadable product descriptions and documentation, as well as updates to devolo software and device firmware.

The CE declaration of this product is separately included (in print). Furthermore, it is available in the download area at www.devolo.com.

For the permitted voltage range for operating the device and the power consumption, refer to the label on the rear side of the device. Additional technical information is available in the download area at www.devolo.com.

2 Introduction

dLAN is an intelligent, secure technology that lets you set up a home network easily, quickly and economically via your household electrical wiring, without the need for complex and expensive dedicated cabling.

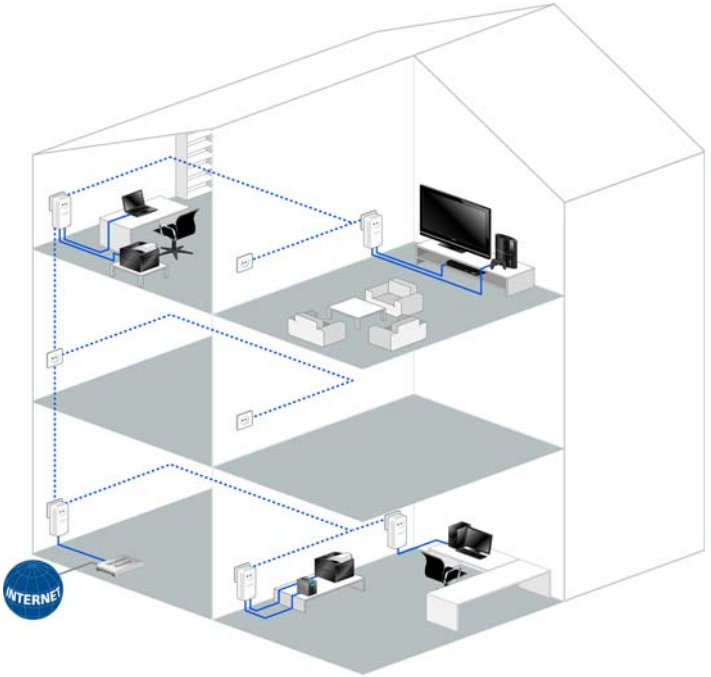


Fig. 1

2.1 What exactly is dLAN?

dLAN (**d**irect **L**ocal **A**rea **N**etwork) uses the household power grid to transfer data between computers equipped with suitable adapters and other network components. As a result, any power outlet can be used as a network access point. The data is modulated prior to transfer and sent as a signal via household power lines. State-of-the-art technology ensures that the power and data networks do not interfere with one another. Networking via dLAN is fast and secure. The data is encrypted using a key to prevent interception by third parties.

2.2 devolo—Up to speed on green IT

The topic everyone is talking about is green IT. devolo has an easy solution: the power saving mode, which comes standard with the home network adapters, sets the company apart from many competitors in the IT industry.

Developers at devolo, have for a long time kept a close eye on how much power dLAN adapters may consume. After all, a devolo network via electrical sockets should not only be convenient, but also require as little energy as possible—particularly during times when it is not being used.

That devolo can satisfy the demand for energy efficiency is evidenced by the patented **power saving mode** in the devices. **It automatically reduces the energy consumption** when the computers in the dLAN network or connected equipment are switched off.

The power saving mode in the adapters is not only a tribute to **environmental protection** but also a real service to the customer. Most people tend to forget to regularly press the standby button on the hardware. **The patented technology in devolo adapters allows you to save energy without having to do anything**. And if less energy is consumed, your electric meter will turn more slowly. In other words, every minute the adapter is in power saving mode, you will save money.

A dLAN adapter connected to a computer can only go into power saving mode if the network card of the switched-off computer is also inactive. If you are using a network card that remains active even when the computer is switched off, we recommend connecting the computer to an on/off switch using a multiple socket so that both the computer and the integrated network card are de-energised.

2.3 dLAN 500 duo+ at a glance

- The particularly easy dLAN home network with patented power-saving technology.
- Adapter with two LAN ports right on the device-two network-compatible devices, such as a computer and consumer electronics, are simultaneously connected to the Internet.
- Computers, laptops, network printers, NAS hard drives, Smart TVs, game consoles, set-top boxes, Blu-ray players are immediately connected to the Internet and with one another
- Power outlet with child-safety feature for optimal security.
- The integrated socket ensures that no power outlet in the room is lost.
- Integrated mains filter for maximum transmission quality in the dLAN network.
- High transmission rate for fast surfing, multimedia streaming, Internet TV in HD quality and Web telephony—the right home network technology for state-of-the-art broadband Internet connections, such as DSL, VDSL or cable.
- Simply plug in the adapter, connect the LAN cable-have fun! No configuration necessary.
- Secure AES encryption is activated very easily
  - at the **touch of a button** on the adapter or
  - via the devolo software **dLAN Cockpit** for PC (Windows XP/Windows Vista/Windows 7/ Windows 8), Mac and Linux
- The patented intelligent **Dynamic PowerSave** automatically uses less power in standby mode.

2.4 Sample applications

Extending Internet over the electrical wiring

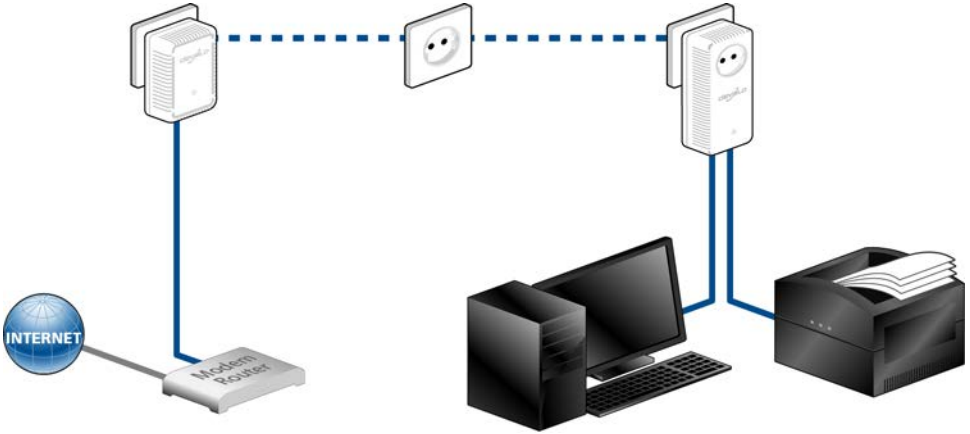


Fig. 2

Networking computer and IT accessories

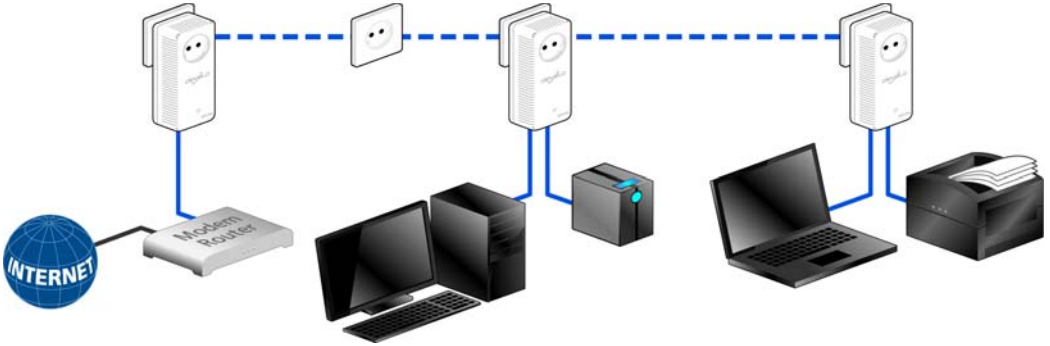


Fig. 3

3 Installation

This chapter covers everything you need to know to set up your dLAN 500 duo+. It will explain connecting the dLAN 500 duo+ and its functions. We will also briefly introduce the devolo software and guide you through its installation.

Fig. 4 is country-specific

3.1 Package contents

Please ensure that the delivery is complete before beginning with the installation of your dLAN 500 duo+:

- **Single Kit**:
  - dLAN 500 duo+
  - Network cable
  - Hard copy of installation guide

or

- **Starter Kit**:
  - Two dLAN 500 duo+
  - Two network cables
  - Hard copy of installation guide

or

- **Network Kit**:
  - Three dLAN 500 duo+
  - Three network cables
  - Hard copy of installation guide

devolo AG reserves the right to change the package contents without prior notice.

3.2 System requirements

- **Operating systems**: Windows XP (32 bit), Windows Vista Home Premium (32 bit/64 bit), Windows 7 Home Premium (32 bit/64 bit), Windows 8 (32 bit/64 bit), Linux (Ubuntu), Mac (OS X) and any other operating system with network support
- **Network connection**

Please note that your computer or other device must feature a network adapter with a network port.

To set up a dLAN network, you need two dLAN devices (200 Mbps or 500 Mbps).

3.3 Functions

The dLAN 500 duo+ has a monitoring light (LED), two network jacks and an encryption button.

Monitoring light

The monitoring light (LED) shows all of the statuses for the dLAN 500 duo+ by illuminating and/or flashing in different ways:

- The LED **flashes at uniform intervals** (of 2 s) if the dLAN 500 duo+ is connected to the **mains supply** but there is **no dLAN connection**.
- The LED **lights up** if the dLAN 500 duo+ **is ready to operate** and there is a **dLAN connection**.
- The LED **flashes quickly** if the encryption process (**pairing**) is being performed in the dLAN network.
- The LED **flashes at irregular intervals** (1 s/ 15 s) if the dLAN 500 duo+ is in **PowerSave mode**.

Network connections

These are the connection points on the dLAN 500 duo+ for connecting it to a computer and/or another network device with the network cable (included).

Encryption button

Data encryption at the touch of a button; For more information on the functions of the encryption button, please see the chapter **4.2 dLAN network encryption at the touch of a button**.

Integrated electrical socket

If you connect additional network devices using a multiple socket, plug this multiple socket into the electrical socket of the dLAN 500 duo+. The integrated mains filter eliminates any noise of connected devices and significantly improves data transmission in the home network.

Please note that all dLAN devices to be connected to your network are also connected to your household electrical wiring. A dLAN device switches to Standby mode after a short while if no active network device such as a computer is connected to the network port. In Standby mode, the dLAN device cannot be accessed via the power supply grid. As soon as the network device (e.g. computer) connected to the network interface is switched on again, your dLAN device can also be reached again via the electrical wiring.

3.4 Connecting the dLAN 500 duo+

This section describes how to connect your dLAN 500 duo+ to a computer and/or other network device.

① Use the included network cable to connect the dLAN 500 duo+ to the network port of your running computer and/or other network device.

② Plug the dLAN 500 duo+ into a free electrical outlet.

Additional network devices that are connected via a multiple socket are connected to the mains power supply by plugging the multiple socket into the integrated electrical socket of the dLAN 500 duo+.

③ Once you have connected at least two dLAN adapters as described above, your dLAN network has been set up. To secure your dLAN network, continue with the configuration as described in chapter **4 dLAN network**.

3.5 Software installation

3.5.1 Software for Windows

The devolo software is available to you at www.devolo.com/500duo+. After you have downloaded the installation file to your PC, start it by double-clicking on it.

Use the installation wizard to install the devolo **dLAN Cockpit** for using the adapter with the Windows operating system. **dLAN Cockpit** finds all reachable dLAN adapters in your dLAN network, displays information about these devices and encrypts your dLAN network individually.

During the installation process, you will be given the choice of installing all software components (**Standard installation**) or selecting individual ones (**Custom installation**).

To take full advantage of the functions of your device, we recommend installing all of the applications.

You will be asked for permission to transfer anonymous performance data related to your dLAN adapter to devolo. The data sent to devolo pertains only to the performance values of your dLAN devices. The data is anonymised and will be used exclusively for statistical purposes. By providing it, you can help us improve our products. You can find the installed software applications in the **Start** ▷ **Programs** ▷ **devolo** program group.

3.5.2 Software for Mac OS X

The devolo software is available to you at www.devolo.com/500duo+. After you have downloaded the installation file to your PC, start it by double-clicking on it.

3.5.3 Software for Linux (Ubuntu)

The devolo software is available to you at www.devolo.com/500duo+. After you have downloaded the installation file to your PC, start it by double-clicking on it.

4 dLAN network

4.1 Security in the dLAN

Before you can use the dLAN 500 duo+ in your dLAN network, first you have to connect it to other dLAN devices as a home network. Two specific pieces of information are especially important for this:

- Shared use of a dLAN password results in a delimited dLAN network.
- Shared use of the dLAN password serves as access control to the dLAN network as well as the encryption, and thereby the interception protection, of the transmitted data.

The dLAN password can be set in different ways:

- Automatically using the **encryption button** (see **4.2 dLAN network encryption at the touch of a button**)
- Manually using the **dLAN Cockpit** program (see **4.3 dLAN Cockpit**).

4.2 dLAN network encryption at the touch of a button

To encrypt a dLAN network, in which all associated devices are equipped with an encryption button, simply press the encryption button that is located on the device. Pressing this button will encrypt your dLAN network with a randomly generated password.

Fig. 5

Adapters cannot be configured while in Standby mode.

The following section contains exact instructions on the basis of possible network scenarios:

Encrypting a new dLAN network consisting of two dLAN 500 duo+ adapters

Once both dLAN 500 duo+ adapters have been successfully connected, press each encryption button for **1 second within two minutes** of one another.

That's it! Your dLAN network is now protected against unauthorized access.

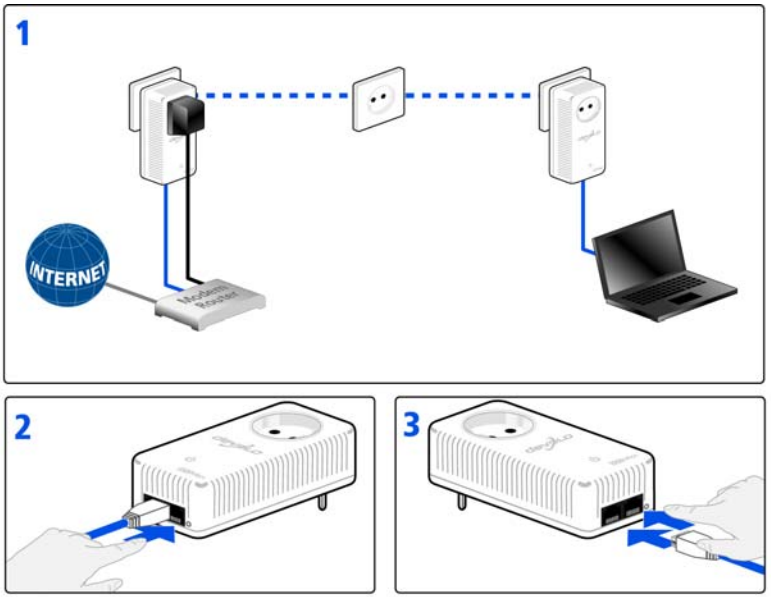


Fig. 6

Expanding an existing dLAN network with a new dLAN 500 duo+

If you have already secured your existing dLAN network using the encryption button, use the same method to integrate other adapters. Once you have successfully connected the new dLAN 500 duo+, first press the encryption button of one of your network's existing adapters (**1 second**), then press the encryption button of your new dLAN 500 duo+ (**1 second**) within two minutes.

That's it! The new dLAN 500 duo+ is now integrated in your network. To integrate additional dLAN adapters in your network, repeat the above steps.

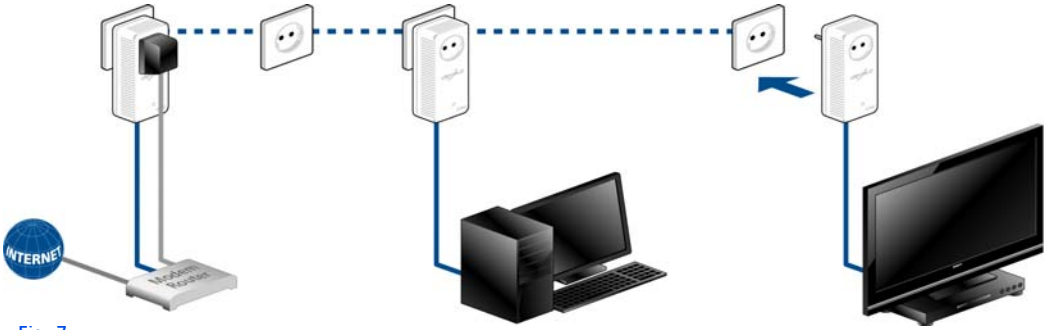


Fig. 7

Excluding a dLAN 500 duo+ from your network

To exclude a dLAN 500 duo+ adapter from an existing network, press its encryption button **for at least ten seconds**. The device will be assigned a new randomly generated password and will thus no longer be able to access the network. To integrate the adapter in a different dLAN network, follow the steps described above, depending on whether you are setting up a new network or adding the adapter to an existing one.

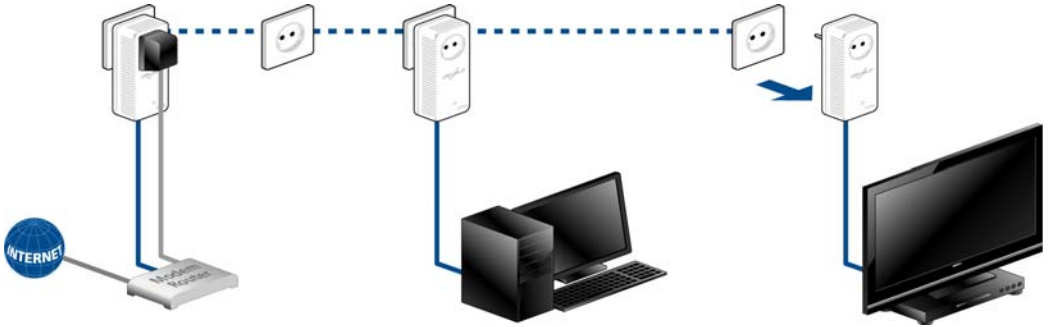
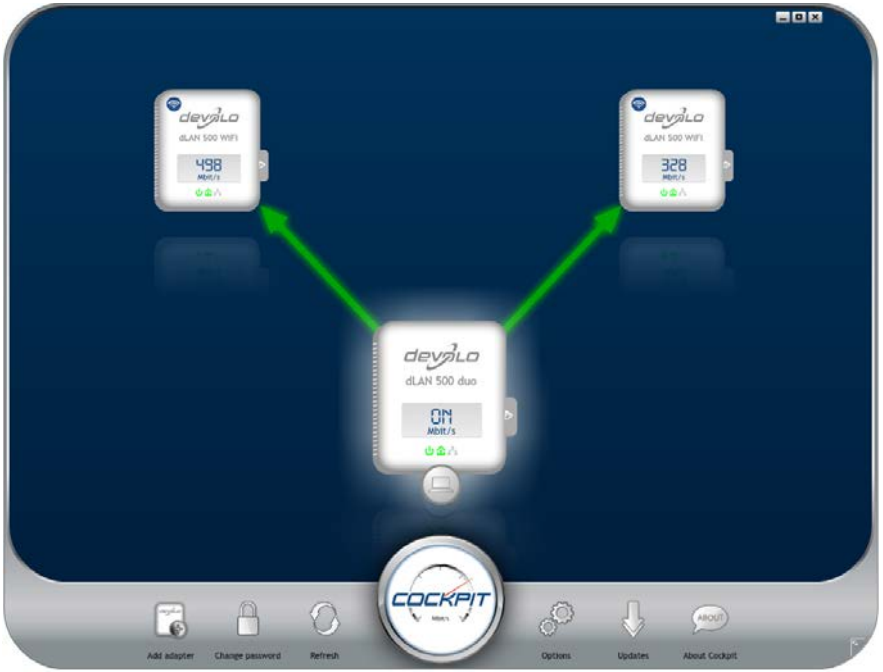


Fig. 8

4.3 dLAN Cockpit

devolo **dLAN Cockpit** is a monitoring and encryption program that detects all reachable dLAN devices in your home network and combines them in a secure network. Due to its logical graphic design, the dLAN Cockpit is easy and intuitive to operate. After installing the devolo software, it can be found in the **Start** ▷ **Programs** ▷ **devolo** program group.



After starting the dLAN Cockpit, all reachable dLAN devices in your home network will appear. This may take a moment.

All adapters found in the network appear with as adapter icon with a corresponding product name. The adapter in the middle of the dLAN network identified with the symbol shown here symbolises your locally connected device. If you have multiple dLAN devices connected locally, you can jump back and forth between them. Clicking an adapter icon with the mouse enables the corresponding dLAN device and highlights it.

The coloured connecting lines of the adapters illustrate the current transmission quality:

- **Green**: the network connection is suitable for HD video streaming.
- **Orange**: the network connection is suitable for SD video streaming and online gaming.
- **Red**: the network connection is suitable for simple data transfer and Internet access.

If data transmission from one device to another is actually taking place, the data rate is displayed on the respectively highlighted adapter.

Settings and functions

You can configure settings for the respectively highlighted device or for the network

- via the buttons at the bottom edge of the screen
- or via tabs arranged at the side of each adapter.

You can always use the **Refresh** button to display the current status of devices that have been found (if this hasn't happened automatically).

By means of the **Options** button or the corresponding tabs of the respective adapter, you can learn device information such as the firmware version used and the individual MAC address.

Options are given like assigning an **additional name**, resetting the respective device to the **factory default settings** or **removing** a **device** from the existing dLAN network.

The above-mentioned setting options vary depending on the function and features of your device.

You can also specify whether information on the performance of your dLAN adapters will be transferred to devolo.

The data sent to devolo pertains only to the performance values of your dLAN devices. The data is anonymised and will be used exclusively for statistical purposes. By providing it, you can help us improve our products.

The **Troubleshooting Guide** includes installation instructions and information about how to connect your devices optimally with one another.

4.3.1 Encrypting a network with dLAN Cockpit

If you use dLAN devices **without an encryption button**, data can be encrypted only via **dLAN Cockpit**.

Before the networking procedure, note the security IDs of all dLAN adapters. This unique identifier of each dLAN device is located on the label on the housing. It consists of 4 x 4 letters separated by dashes (e.g. ANJR-KMOR-KSHT-QRUV). Ensure that all dLAN adapters are connected to the power grid and computers or other network components as appropriate.

Scan for local adapter

After dLAN Cockpit is started, it searches for the dLAN adapter connected directly to your computer first.

Adding an adapter

Add all the dLAN devices you want to your dLAN network by selecting the **Add adapter** button. You will need the **16**-character security IDs of the adapters from the label on the housing. Enter it now in the **Security ID** field and confirm with **OK**. If a security ID is correct and the device can be reached in the dLAN network, it will be added to your network of configured adapters and also displayed in the program.

Entering a network password

After you have added all the dLAN devices you want to your dLAN network, select the **Change password** button to assign a shared network password that will apply for all registered adapters in your personal home network.

You can choose between your own password, a random password and the default password. To define your own password with a length of at least eight characters, enter this into the **Network password** text field. Alternatively, you can have a randomly selected, highly secure password assigned using the **Generate secure password** button. Use the **Factory default password** button to reset the dLAN adapter to the default password. Normally, the display of the password is hidden for security reasons. If you enable the option **Show characters**, the current password is displayed in legible form in the text field.

The factory default password is* HomePlugAV. *Assigning a specific password to a single adapter will exclude it from the remaining dLAN network.

If **dLAN Cockpit** is called up again later after a successful initial installation, for example to **integrate** a **new adapter** into a network, the application remembers the devices that were entered earlier. Enter the new device as described in the **Adding an adapter**

section. The **current network password** is assigned **automatically** to the newly added device.

5 Appendix

5.1 Bandwidth optimization

To significantly improve the transmission capacity of the network, we recommend that you comply with the following "connection rules":

- Plug the device directly into a wall socket. Avoid multiple sockets.

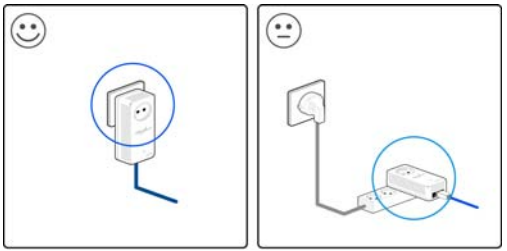
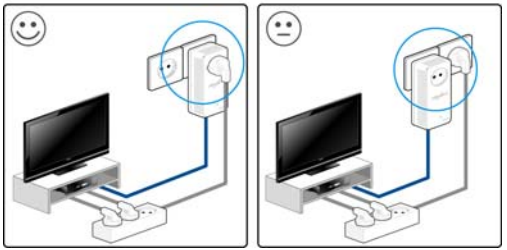


Fig. 9



- You should connect all additional network devices that are connected to a multiple socket to the mains power supply via the electrical socket integrated into the dLAN 500 duo+. To take full advantage of the filter function of the dLAN 500 duo+ and to improve data transmission in the network, always plug the multiple socket into the electrical socket of the dLAN 500 duo+.

5.2 Important safety instructions

All safety and operating instructions should be read and understood before using the device, and should be kept for future reference.

- Never open the device. There are no user-serviceable parts inside the device.

Do not try to service this product yourself! Contact qualified technicians each and every time your device needs maintenance. There is a risk of electric shock!

- Use the device in a dry location only.
- Always use the included network cable to connect the device.

The outlet must be within reach of the connected network devices. The adapter and the network devices must be easily accessible.

- To switch the device off, pull the power plug.
- To disconnect the device from the power supply grid, pull the power plug.
- Do not insert any objects into the openings of the device.
- Do not keep the device in direct sunlight.
- Slots and openings on the case serve as ventilation. Never block or cover them.
- Never set up the device near a heater or radiator.
- The device should be located only where sufficient ventilation can be ensured.
- Disconnect the device from the power supply grid before cleaning. Use a moist towel to clean the device. Never use water, paint thinner, benzene, alcohol or other strong cleaning agents when cleaning the device, as these could damage the case.
- Never use the device with a power supply that does not meet the specifications provided on the rating plate. If you do not know what type of power supply you have at home, contact your dealer or energy supplier.
- In the event of damage, disconnect the device from the power supply grid and contact customer service. This applies, for example, if
  - the plug is damaged.

There is a risk of electric shock!

  - liquid has been spilled on the device or objects have fallen into the device.
  - the device has been exposed to rain or water.
  - the device does not work, even though the operating instructions have been followed properly.
  - the device's case is damaged.

5.3 Disposal of old devices

To be used in the countries of the European Union and other European countries with a separate collecting system:

The icon with crossed-out wastebasket on the device means that this adapter is an electrical or electronic device that falls within the scope of application of the German Electrical and Electronic Equipment Act ("Elektrogesetz"). Since 24 March 2006, these types of devices may no longer be disposed of with household waste. Rather, in Germany, they can be given to a municipal collection point free of charge. Contact your municipal government to find out the address and hours of the nearest collection point.

5.4 Warranty conditions

The devolo AG warranty is given to purchasers of devolo products in addition to the warranty conditions provided by law and in accordance with the following conditions:

1 Warranty coverage

a) The warranty covers the equipment delivered and all its parts. Parts will, at devolo's sole discretion, be replaced or repaired free of charge if, despite proven proper handling and adherence to the operating instructions, these parts became defective due to fabrication and/or material defects. Alternatively, devolo reserves the right to replace the defective product with a comparable product with the same specifications and features. Operating manuals and possibly supplied software are excluded from the warranty.

b) Material and service charges shall be covered by devolo, but not shipping and handling costs involved in transport from the buyer to the service station and/or to devolo.

c) Replaced parts become property of devolo.

d) devolo is authorized to carry out technical changes (e.g. firmware updates) beyond repair and replacement of defective parts in order to bring the equipment up to the current technical state. This does not result in any additional charge for the customer. A legal claim to this service does not exist.

2 Warranty period

The warranty period for this devolo product is three years. This period begins at the day of delivery from the devolo dealer. Warranty services carried out by devolo do not result in an extension of the warranty period nor do they initiate a new warranty period. The warranty period for installed replacement parts ends with the warranty period of the device as a whole.

3 Warranty procedure

a) If defects appear during the warranty period, the warranty claims must be made immediately, at the latest within a period of 7 days.

b) In the case of any externally visible damage arising from transport (e.g. damage to the housing), the person carrying out the transportation and the sender should be informed immediately. On discovery of damage which is not externally visible, the transport company and the sender are to be immediately informed in writing, at the latest within 3 days of delivery.

c) Transport to and from the location where the warranty claim is accepted and/or the repaired device is exchanged, is at the purchaser's own risk and cost.

d) Warranty claims are only valid if a copy of the original purchase receipt is returned with the device. devolo reserves the right to require the submission of the original purchase receipt.

4 Suspension of the warranty

All warranty claims will be deemed invalid

a) if the label with the serial number has been removed from the device,

b) if the device is damaged or destroyed as a result of acts of nature or by environmental influences (moisture, electric shock, dust, etc.),

c) if the device was stored or operated under conditions not in compliance with the technical specifications,

d) if the damage occurred due to incorrect handling, especially to non-observance of the system description and the operating instructions,

e) if the device was opened, repaired or modified by persons not contracted by devolo,

f) if the device shows any kind of mechanical damage, or

g) if the warranty claim has not been reported in accordance with 3a) or 3b).

5 Operating mistakes

If it becomes apparent that the reported malfunction of the device has been caused by unsuitable hardware, software, installation or operation, devolo reserves the right to charge the purchaser for the resulting testing costs.

6 Additional regulations

The above conditions define the complete scope of devolo's legal liability.

a) The warranty gives no entitlement to additional claims, such as any refund in full or in part. Compensation claims, regardless of the legal basis, are excluded. This does not apply if e.g. injury to persons or damage to private property are specifically covered by the product liability law, or in cases of intentional act or culpable negligence.

b) Claims for compensation of lost profits, indirect or consequential detriments, are excluded.

c) devolo is not liable for lost data or retrieval of lost data in cases of slight and ordinary negligence.

d) In the case that the intentional or culpable negligence of devolo employees has caused a loss of data, devolo will be liable for those costs typical to the recovery of data where periodic security data back-ups have been made.

e) The warranty is valid only for the first purchaser and is not transferable.

f) The court of jurisdiction is located in Aachen, Germany in the case that the purchaser is a merchant. If the purchaser does not have a court of jurisdiction in the Federal Republic of Germany or if he moves his domicile out of Germany after conclusion of the contract, devolo's court of jurisdiction applies. This is also applicable if the purchaser's domicile is not known at the time of institution of proceedings.

g) The law of the Federal Republic of Germany is applicable. The UN commercial law does not apply to dealings between devolo and the purchaser.

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